

Clinical Pattern of Urinary Stone Disease in Our Setting

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Objectives: To study the basic clinical pattern of urinary stone disease in our setting.

Study design: Descriptive study.

Setting: Department of surgery of Nawabshah Medical College Nawabshah over a period of 4 years between August 2003 to August 2007.

Subjects: A total of 257 urolith patients with different stone burden enrolled in the study.

Methodology: Structured and standardized history and clinical investigations collected in all of urolith patients. The diagnosis of stone disease was based on history, physical examination followed by KUB x-ray, ultrasonography and IVU. All patients subjected to open stone surgery. The data were analyzed prospectively with outcome measures of gender, stone location, clinical presentation and operative procedures.

Results: Out of 257 patients 181 (70.42%) were male and 76 (29.56%) female with male to female ratio of 2.3:1. The age ranged from 1 year to 80 with the mean of 25.8 years. The peak incidence of upper urinary tract stones was in 20-30 years while lower urinary tract stones in both sexes were under 10 years (Table 1). Anatomical distribution of stone showed 116 (45.16%) renal, 21 (8.17%) ureteric, 108 (42%) bladder and 12 (4.66%) urethral calculi (Table 2). The commonest clinical presentation was that of pain in 67.31% of patients associated with haematuria in 26.7% of cases. Clinical urinary tract infection (UTI) was in 15% and 8.9% of patients had spontaneous stone passage (lithuria). The symptoms of bladder outlet obstruction (BOO) including retention of urine were in 7% of cases. Calculus anuria was in 1.9% of cases and 8.1% patients had asymptomatic stones. Biliithiasis (chole-nephrolithiasis) was in 5% of cases (Table 3). Open stone surgery included 84 (32.68%) simple pyolithotomies, 15 (5.83%) extended pyolithotomies, 6 (2.33%) pyolithotomy and pyloplasty, 5 (1.94%) nephrolithotomy, 6 (2.33%) nephrectomies, 21 (8.17%) uretrolithotomy, Cystolithotomy was 113 (43.96%) cystolithotomy, 2 (0.77%) urethrolithotomy and meatotomy in 5 (1.94%) of patients.

Conclusion: Urolithiasis is increasing problem with high frequency of bladder stones and male predominance in our part of Sindh province. Open surgery is still needed to treat the patients where modern and minimally invasive therapeutic modalities are out of reach and non-availability in public sector. Establishment of modern stone clinics in rural setup is the need of today's medical practice.

Keywords: Urinary calculi, Clinical profile, Open stone surgery.

Introduction

Urolithiasis is an ancient disease with global distribution and has perplexed human beings and physicians for many centuries. Pakistan is situated in the middle of Afro-Asian stone belt, a high region of stone incidence.¹ Stone disease is an increasing problem in the Sindh province.² Geographic variation in the rates of urinary stones has been observed for many years not only among countries with higher rates in industrialized nations compared with developing and Third World countries³ Countries of the region show wide variations in prevalence and the site of stone disease.⁴⁻⁷ The etiology of urinary calculus is still not well understood but clearer concepts are gradually emerging with recent research. Stones are merely not life threatening because today's medical practice is extremely adept at removing most of the risk of passing a stone. Urinary stones can cause two problems: when it moves or when it grows to disrupt renal func-

tion and damage occurs. The clinical approach to the stone forming patient includes both medical and surgical issues. The medical evaluation must identify patients at risk for recurrent stone formation, environmental factors that promote stones and systemic disease that contributes to stone formation. Although new and effective therapeutic methods to treat urolithiasis have been introduced recently, urinary stones continue to occupy an important place in everyday urological practice.⁸ Due to lack of research facilities and remoteness prevailing medical problems are virtually unknown outside of the state of Nawabshah. The high percentage of hospital admissions, surgical procedures and serious complications due to urolithiasis stresses the need to research this major health problem in Nawabshah. The purpose of this paper is to study the basic pattern of urinary stone disease, so that problem areas can be identified in context to medical literature and future research planned.

Material and Methods

This is a prospective and descriptive analysis of 257 patients with different stone burden treated between August 2003 and August 2007 at the department of surgery of Nawabshah Medical College/Hospital Nawabshah. The diagnosis of stone disease was based on history, physical examination followed by KUB x-ray, ultrasonography and IVU. Urinalysis, blood picture, blood urea/serum creatinine done in all cases and renal function tests (DTPA) in selected cases. After complete medical evaluation and fitness protocol all patients were subjected to open stone surgery. Case records of all patients reviewed with the outcome parameters of age and sex, stone location, clinical presentation and operative procedures.

Results

Out of 257 patients 181 (70.42%) were male and 76 (29.56%) female with male to female ratio of 2.3:1. The age ranged from 1 year to 80 with the mean of 25.8 years. The peak incidence was of upper urinary tract stones in 20-30 years while lower urinary tract stones in both sexes were under 10 years (Table 1). Anatomical distribution of stone

Table 1: Age and Sex Distribution.

Age Group (Years)	Sex		Total	Percentage (%)
	Male	Female		
1 – 10	67	14	81	31.51
11 – 20	21	17	38	14.78
21 – 30	36	15	51	19.84
23 – 40	13	14	27	10.5
41 – 50	21	07	28	10.89
51 – 60	16	08	24	9.3
61 – 70	06	00	06	2.3
71 – 80	01	01	02	0.77
Total	181	76	257	100

showed 116 (45.16%) renal, 21 (8.17%) ureteric, 108 (42%) bladder and 12 (4.66%) urethral calculi (Table 2). The commonest clinical presentation was that of pain in 67.31% of patients associated with haematuria in 26.7% of cases. Clinical urinary tract infection (UTI) was in 15% and 8.9% of patients had spontaneous stone passage (lithuria). The symptoms of bladder outlet obstruction (BOO) including retention of urine were in 7% of cases. Calculus anuria was in 1.9% of cases and 8.1% patients had asymptomatic stones. Bilithiasis (chole-nephrolithiasis) was in 5% of cases (Table 3). Open stone surgery included 84 (32.68%) simple pyelolithotomies, 15 (5.83%) extended pyelolithotomies, 6 (2.33%) pyelolithotomy and pyloplasty, 5 (1.94%) nephrolithotomy, 6 (2.33%) nephrectomies, 21 (8.17%) urethrolitho-

tomy, 113 (43.96%) cystolithotomy, 2 (0.77%) urethrolithotomy and meatotomy in 5 (1.94%) of patients.

Table 2: Anatomical Location of Urinary Calculi.

Anatomical site	Number	Percentage (%)
Renal	116	45.16
Ureteral	21	8.17
Vesical	108	42
Urethral	12	4.66
Total	257	100

Table 3: Clinical Presentations in 257 – Patients.

Symptom	Number	Percentage
Pain	173	67.31
Haematuria	67	26.07
UTI	39	15.1
Lithuria (stone passage)	23	8.9
Calculus anuria	5	1.9
BOO	18	7.0
Asymptomatic	21	8.1
Bilithiasis(chole-nephrolithiasis)	13	5.0

Discussion

Urinary stones in its different forms are the third most common affliction of the urinary tract.⁹ Calculus disease is the commonest urological ailment in Pakistan.¹⁰ It has been apparent for several years that the incidence rates of lithiasis vary dramatically, not only from continent to continent but also between adjacent regions of a country, even if one allows for differences in methodology and criteria selection among epidemiology studies⁸. The lifetime prevalence of urinary stones has increased through out the 20th century and occurs in up to 15% of the population.¹¹ It is generally accepted that stones occur more commonly in males than females. Our findings corroborate with this sex difference as reported by others.¹²⁻¹⁶ No age group is spared to urinary stone disease in Pakistan though a change in the age pattern of patients of urolithiasis has been reported in industrialized countries. Age analysis in our series showed a high occurrence of urinary stones among children up to 10 years (31.51%) and adults 21-30 years (19.84%) which is in agreement with other studies.^{12,15-18} Calculi occurred in various sites in the urinary tract were in the following order of frequency vesical < renal < ureteral < urethral (42%), (45.16%), (21%) and (4.66%) respectively in our series. The prevalence of vesical stones was extremely high in pediatric age group. These were endemic bladder calculi and predominantly male belonging to low socioeconomic class and mai-

nly from rural areas. This is comparable to the findings of previous studies.^{19,23} The natural history of disease varies in different populations.²³ Urolithiasis still results in serious morbidity, pain, haematuria, infection and renal failure²⁴. The clinical presentation of patients with urolithiasis in our series is pain in (67.31%), haematuria (26.02%), UTI (15.1%), BOO (7%), stone passage (8.9%) and asymptomatic (8.1%). Symptoms with almost same frequencies have been reported by other researchers.^{23,25,26} The goals of therapy include total stone removal, eradication of infection, correction of associated collecting system obstruction, preservation of renal function and prevention of recurrence. There are number of therapeutic options for patients requiring stone removal including ESWL, PCNL, sandwich therapy (ESWL+PCNL), endourologic stone removal, open surgery, laparoscopy and chemolysis. Open stone surgery is infrequently undertaken in current urologic practice. Open surgery is still needed to treat the patients who are failures or not candidates for endourologic therapy or preferences regarding outcomes are well established. Here in our setup of the world it remains out of reach, of high cost and non-availability in public sector. In the operative management bladder calculi in 113 cases (43.96%) by cystolithotomy, ureteric calculi in 21 cases (8.17%) by ureterolithotomy with excellent stone free rates. The bladder stones were endemic in child age group and secondary to bladder outlet obstruction. Surgical procedures for renal calculi in 116 cases (45.13%) in our series are in agreement with the medical literature.²⁹ Our nephrectomy rate is low (2.33%) compared with other series.³⁰ This probably reflects low incidence of pyonephrosis and our conservative policy in the operative treatment of complex stones.

It is concluded that although new modalities have been added to the armoury of surgeons to treat urinary stones and patients now have more choice but in our part of the world it remains out of the reach of common man because of high cost and non-availability in public sector. Open stone surgery remains the only treatment available in this part of the world with high success rates, yet it has its limitations and can be applied only to standard patients.

Conclusion

Stone disease is an increasing and major public health problem with high frequency of bladder stone with male predominance in our region of Sindh province. The pattern of urinary stone disease as seen in our setting, though in more aspects being similar to that in the developing countries. Open stone surgery is a more favorable option and commonest procedure applied with high success rates and excellent stone clearance in our part of the world. Establishment of new modern stone clinics in our setup and public education for the early detection and the treatment of stone disease are the need of today's medical practice.

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